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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/006,178	12/04/2001	Charles A. Miller	FORM 2208 (P141)	2874

7812 7590 04/23/2003

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EXAMINER

GLENN, KIMBERLY E

ART UNIT PAPER NUMBER

2817

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/006,178

Applicant(s)

MILLER, CHARLES A.

Examiner

Kimberly E Glenn

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-13 and 16-18 is/are rejected.
- 7) ☒ Claim(s) 7, 14, 15 and 19-37 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 23.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1-5, 8-10 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Agoston US Patent 4,701,714.

Agoston disclose a transmission line comprising: a signal conductor for conveying the signal between the two points (12 and 18); first varactor diode that is a function of a magnitude of a first control voltage +Vt supplied as input thereto; and first coupling capacitor C1 between the first varactor diode D1 and the signal conductor such that the first varactor diode substantially influences a rate at which the signal conductor conveys the signal between the two points. 3The circuit further comprises a first coupling conductor in electrical contact with the first varactor diode and positioned near the signal conductor such that the first coupling capacitor is provided between the first coupling conductor and the signal conductor. 4The first varactor diode links the first coupling conductor to a ground potential. 5 Agoston does not disclose explicitly a means for generating the first control voltage on the first coupling conductor so that the first control voltage appears across the first varactor diode. It would be inherent that some means generates the +Vt signal. 8The signal conductor is embedded in an insulating substrate (column 2/line 44). 9 Agoston disclose a second varactor diode that is a function of a magnitude of a second control voltage supplied as input thereto; and second coupling means for providing a

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sufficient amount of second coupling capacitor between the second variable capacitance and the signal conductor such that the second capacitance substantially influences a rate at which the signal conductor conveys the signal between the two points. (Column 2, line 21 through column 3 line 28)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Agoston US Patent 4,701,714 in view Kameya US Patent 4,829,272.

Agoston discloses a transmission line comprising: a signal conductor for conveying the signal between the two points (12 and 18); first varactor diode that is a function of a magnitude of a first control voltage $+V_t$ supplied as input thereto; and first coupling capacitor C1 between the first varactor diode D1 and the signal conductor such that the first varactor diode substantially influences a rate at which the signal conductor conveys the signal between the two points. Refer to 35 USC 102 rejection for details of Agoston reference.

Thus Agoston is shown to teach all the limitation of the claim with the exception a digital to analog converter generating a first control voltage connected to the first coupling conductor.

Kameya teaches a digital to analog converter connected to a variable capacitance diode wherein the DAC serves a signal source. (Figure 1 and column 3 line 56 through column 4 lines 20)

One skilled the art, at the time of the invention, would have found it obvious to provide the circuit of Agoston with a digital to analog converter as shown in Kameya. The Agoston reference is silence on a means for generating the first control signal and one of ordinary skill in the art would have found it obvious to used the DAC converter since is well known in the art for DAC to provide control signals to variable capacitance diodes.

Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agoston US Patent 4,701,714 in view Kondo et al US Patent 5,146,192

Agoston disclose a transmission line comprising: a signal conductor for conveying the signal between the two points (12 and 18); first varactor diode that is a function of a magnitude of a first control voltage $+V_t$ supplied as input thereto; and first coupling capacitor C1 between the first varactor diode D1 and the signal conductor such that the first varactor diode substantially influences a rate at which the signal conductor conveys the signal between the two points. Refer to 35 USC 102 rejection for details of Agoston reference.

Thus Agoston is shown to teach all the limitation of the claim with the exceptions the first coupling means comprises a first coupling conductor in electrical contact with the first varactor diode and positioned near the signal conductor such that the first coupling capacitance is provided between the first coupling conductor and the signal conductor and the second coupling means comprises a second coupling conductor in electrical contact with the second varactor diode and positioned near the signal conductor such that the second coupling capacitance is provided between the second coupling conductor and the signal conductor; a control means for generating the first control voltage on the first coupling conductor so that the first control voltage appears across the first varactor diode and for generating a second control voltage on the second

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coupling conductor so that the second control voltage appears across the second varactor diode and the first and second control voltages are of opposite polarity.

Kondo et al teaches a delay circuit comprising a first and second control line (4 and 4') connected to the variable capacitance diodes. The first and second control lines provided the variable capacitances with reverse bias voltages, which varies the capacitances of the diodes. The reverse bias voltages have opposite polarity. (Column 7 line 1 through line 43 and figures 8 and 14)

One skilled the art, at the time of the invention, would have found it obvious to provide the circuit of Agoston with a first and second control lines as shown in Kondo et al. The suggestion / motivation for the modification of Agoston would have to enhance the delay on the delay line.

Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agoston US Patent 4,701,714 in view Koscica et al US Patent 5,640,042.

Agoston disclose a transmission line comprising: a signal conductor for conveying the signal between the two points (12 and 18); first varactor diode that is a function of a magnitude of a first control voltage $+V_t$ supplied as input thereto; and first coupling capacitor C1 between the first varactor diode D1 and the signal conductor such that the first varactor diode substantially influences a rate at which the signal conductor conveys the signal between the two points. Thus Agoston is shown to teach all the limitation of the claim with the exception the first means comprises a thin film varactor. Refer to 35 USC 102 rejection for details of Agoston reference.

Koscica et al teaches a thin film ferroelectric varactor. (See summary of the invention)

One skilled in the art, at the time of the invention, would have found it obvious to replace the varactor diodes of Agoston with the thin film ferroelectric varactor of Koscica et al. The suggestion/motivation for this modification would have been to provide a variable capacitance that is capable of providing maximum tunability without being susceptible to overheating or burnout caused by overbiasing or reverse biasing from an applied voltage.

Allowable Subject Matter

Claims 7, 14, 15, 19, 20 and 21-27 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: With regards to claims 7 and 15, the prior art of record does not disclose or fairly teach a signal conductor, varactor diode, and a coupling means comprising a first coupling capacitance and a first coupling conductor wherein an insulating substrate residing between the first coupling conductor and the signal conductor. With regards to claims 19 and 20, the prior art of record does not disclose or fairly teach the first coupling conductor comprises: a plurality of conductive fingers, each being positioned near the signal conductor and spaced apart from one another such that each conductive finger provides a portion of the first coupling capacitance along a separate portion of the signal conductor, and means for conductively linking the conductive fingers to the first varactor diode. With regards to claim 14, the prior art of record does not disclose or fairly teach a control means comprises a first digital-to analog converter (DAC) connected to the first coupling conductor, wherein the first DAC generates the first control voltage of magnitude controlled by first data applied as input to the first DAC; wherein the control means further

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comprises a second (DAC) connected to the second coupling conductor, wherein the second DAC generates the second control voltage of magnitude controlled by second data applied as input to the second DAC, and means for applying the first data as input to the first DAC and the second data as input to the second DAC. With regards to claims 21-24, the prior art of record does not disclose or fairly teach the signal conductor has an elongate first planar surface extending in a first direction; wherein the first coupling means comprises a conductive second planar surface parallel and proximate to a first area of the first planar surface; and wherein the transmission line further comprises an insulating substrate interconnecting the first area of the first planar surface to second planar surface. With regards to claims 25-37, the prior art of record does not disclose or fairly teach a signal conductor, varactor diode, and a coupling means comprising a first coupling capacitance and a first coupling conductor wherein the signal conductor has a substantially circular cross-section perpendicular to a direction in which it conveys the signal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly E Glenn whose telephone number is (703) 306-5942. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (703) 308-4909. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

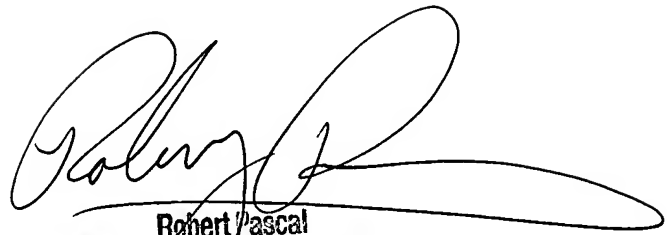
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

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Kimberly E Glenn
Examiner
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April 18, 2003



Robert Pascal
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